ULITIN, N.S.; SNITKO, I.K., prof., doktor tekhn.nauk, nauchnyy red.; VILKOV, G.N., red.izd-va; BOROVNEV, N.K., tekhn.red.; RUDAKOVA, N.I., tekhn.red.

[Strength of materials] Soprotivlenie materialov. Moskva, Gos.izd-vo lit-ry po stroit., arkhit. i stroit.materialam, 1959. 255 p. (MIRA 13:1)
(Strength of materials)

DYKHOVICHNYY, Abram Ionovich; RABINOVICH, I.M., prof., retsenzent; KISELEV, V.A., prof., retsenzent; SNITKO, I.K., prof., otv.red.; PETRAKOVA, Ye.P., red.izd-va; KOROVENKOVA, Z.A., tekhn.red.

[Structural mechanics; abridged course] Stroitel'naia mekhanika; sokrashchennyy kurs. Izd.3.,perer. Moskva, Ugletekhizdat, 1959. 342 p. (MIRA 12:4)

1. Rukovoditel' kafedry stroitel'noy mekhaniki Voyenno-inzhenernoy akademii imeni V.V.Kuybysheva (for Rabinovich).
(Structures, Theory of)

FILONENKO-BORODICH, Mikhail Mitrofanovich; SNITKO, I.K., red.; KRYUCHKOVA, V.N., tekhn.red.

[Theory of elasticity] Teoriia uprugosti. Izd.4., perer. i dop. Moskva, Gos.izd-vo fiziko-matem.lit-ry, 1959. 364 p. (MIRA 12:8)
(Elasticity)

IL'YUSHIN, Aleksey Antonovich; LENSKIY, Viktor Stepanovich; SNITKO, I.K., red.; AKHLAMOV, S.N., tekhn.red.

[Strength of materials] Soprotivlenie materialov. Moskva, Gos. izd-vo fiziko-matem.lit-ry, 1959. 371 p. (MIRA 12:10)
(Strength of materials)

BELYAYEV, Nikolay Mikhaylovich, prof. [deceased]; BELYAVSKIY, L.A., dotsent; KIPNIS, Ya.I., dotsent; KUSHELEV, N.Yu., dotsent; SINITSKOV, A.K., dotsent; KACHURIN, V.K., prof., obshchiy red.; SNITKO, I.K., red.; GAVRILOV, S.S., tekhn.red.

[Strength of materials] Soprotivlenie materialov. Izd.12. Moskva, Gos.izd-vo fiziko-matem.lit-ry, 1959. 856 p. (MIRA 12:8)

(Strength of materials)

KOVALENKO, A.F.; SNITKO, I.K., prof., doktor tekhn.nauk, nauchnyy red.; GORYACHEVA, T.V., red.izd-va; SHERSTNEVA, N.V., tekhn.red.

[Designing frames by the moment-distribution method] Raschet ram metodom raspredeleniia momentov. Moskva, Gos.izd-vo lit-ry po stroit., arkhit. i stroit.materialam, 1960. 89 p. (MIRA 14:4)

(Structural frames)

PHASE I BOOK EXPLOITATION SOV/5476

Snitko, Ivan Konstantinovich

Prakticheskiye metody rascheta staticheski neopredelimykh sistem (Practical Methods of Calculating Statically Indeterminate Structures) Moscow, Gosstroyizdat, 1960. 184 p. 6,000 copies printed.

Ed. of Publishing House: G. N. Vilkov; Tech. Ed.: N. V. Sherstneva.

PURPOSE: This book is intended for engineers, aspirants, and students in advanced courses in schools of higher technical education.

COVERAGE: The book outlines an approximate method for calculating the strength, stability, and oscillatory movements of rod frame structures. It is considered to be of practical use for engineers. A knowledge of the precise classical method of calculating by solving slope-deflection canonical equations is assumed. The practical method of successive approximation of moment distribution by the use of for-

Card 1/4

PANOVKO, Yakov Gilelevich; SNITKO, I.K., red.; YERMAKOVA, Ye.A., tekhn.red.

[Internal friction in the vibration of elastic systems] Vnutrennee trenie pri kolebaniiakh uprugikh sistem. Moskva, Gos.izd-vo fiziko-matem.lit-ry, 1960. 193 p. (MIRA 14:4)

(Elastic solids--Vibration) (Internal friction)

KINASOSHVILI, Robert Semenovich; SNITKO, I.K., red.; AKHLAMOV, S.N., tekhn.red.

[Resistance of materials; brief manual] Soprotivlenie materialov; kratkii uchebnik. Izd.6., perer. Moskva, Gos.izd-vo fiziko-matem. lit-ry, 1960. 387 p. (MIRA 13:9)
(Strength of materials)

ZINOV'YEV, V.A.; SVESHNIKOV, G.N.; SNITKO, I.K.; YAKOVLEV, K.P., red.; RYDNIK, V.I., red.; AKHLAMOV, S.N., tekhn.red.

[Short handbook on physics and mechanics] Kratkii fiziko-tekhnicheskii spravochnik. Moskva, Gos.izd-vo fiziko-matem. lit-ry. Vol.2. [General mechanics, strength of materials, theory of mechanisms and machines] Obshchaia mekhanika, soprotivlenie materialov, teoriia mekhanizmov i mashin. 1960. 411 p. (MIRA 13:12)

(Mechanics) (Strength of materials) (Machinery)

BOLOTIN, Vladimir Vasil'yevich, doktor tekhn. nauk, prof.; SNITKO, I.K., doktor tekhn. nauk, prof., nauchnyy red.; BUDARINA, E.M., red.; GOL'BERG, T.M., tekhn. red.

[Statistical methods in structural mechanics] Statisticheskie metody v stroitel'noi mekhanike. Moskva, Gos. izd-vo lit-ry po stroit., arkhit. i stroit. materialam, 1961. 201 p. (MIRA 14:6)

(Statistical mechanics) (Structures, Theory of)

BOLOTIN, Vladimir Vasil'yevich; SNITKO, I.K., red.; YERMAKOVA, Ye.A., tekhn. red.

[Nonconservative problems in the theory of elastic stability] Nekonservativnye zadachi teorii uprugoi ustoichivosti. Moskva, Gos.izd-vo fiziko-matem.lit-ry, 1961. 339 p. (MIRA 14:12)
(Elasticity) (Strength of materials)

AMBARTSUMYAN, Sergey Aleksandrovich; SNITKO, I.K., red.; AKHLAMOV, S.N., tekhn.red.

[Theory of anisotropic shells] Teoriia anizotropnykh obolochek. Moskva, Gos.izd-vo fiziko-matem.lit-ry, 1961. 384 p. (MIRA 14:5)

(Elastic plates and shells)

RAKHMATULIN, Khalil Akhmedovich; DEM'YANOV, Yuriy Andreyevich; SNITKO, I.K., red.; MURASHOVA, N.Ya., tekhn. red.

[Effect of intense momentary loads on the strength of materials] Prochnost' pri intensivnykh kratkovremennykh nagruzkakh. Moskva, Gos. izd-vo fiziko-matem. lit-ry, 1961. 396 p. (MIRA 14:8)
(Strength of materials)

BARRE DE SAINT VENANT, Adhemar Jean Claude [1797-1886]; PARIYSKIY, A.A. [translator]; DZHANELIDZE, G.Yu., red.; SNITKO, I.K., red.; AKHLAMOV, S.N., tekhn. red.

[Memoir on the torsion of prisms. Memoir on the flexure of prisms] Memuar o kruchenii prizm. Memuar ob izgibe prizm. Moskva, Gos. izd-vo fiziko-matem. lit-ry. 1961. 518 p. Translated from the French. (MIRA 15:5)

(Elastic rods and wires) (Prisms)
(Barre de Saint Venant, Adhemar Jean Claude, 1797-1886)

FILONENKO-BORODICH, Mikhail Mitrofanovich; IZYUMOV, S.M.; OLISOV, B.A.; MAL'GINOV, L.I.; SNITKO, I.K., red.; MURASHOVA, N.Ya., tekhn. red.

[Strength of materials course] Kurs soprotivleniia materialov. Pod obshchei red. M.F.Filonenko-Borodicha. 4zd.5., perer. Moskva, Gos. izd-vo fiziko-matem.lit-ry. Pt.1. 1961. 656 p. (MIRA 15:3)

(Strength of materials)

ZINOV'YEV, V.A.; SVESHNIKOV, G.N.; SNITKO, I.K.; YAKOVLEV, K.P., red.; RYDNIK, V.I., red.; KOLESNIKOVA, A.P., tekhn. red.

[Concise physical and technological handbook]Kratkii fiziko-tekhnicheskii spravochnik. Moskva, Fizmatgiz. Vol.2.[General mechanics, strength of materials, theory of mechanisms and machinery]Obshchaia mekhanika, soprotivlenie materialov, teoriia mekhanizmov i mashin. 1962. 417 p. (MIRA 15:12)
(Mechanics) (Strength of materials) (Mechanical engineering)

PAPATSENKO, Khristofor Ivanovich; SNITKO, I.K., red.; KLYUCHNIKOVA, L.P., ved. red.; YAKOVLEVA, Z.I., tekhn. red.

[Design, construction and operation of self-supporting, suspended pipelines]Proektirovanie, stroitel'stvo i ekspluatatsiia samonesushchikh provisaiushchikh truboprovodov. Moskva, Gostoptekhizdat, 1963. 110 p. (MIRA 16:4)

(Pipelines)

[illegible] ...[illegible]; [illegible]TKO, I.K., prof., doktor
[illegible]

[illegible] type crawler belts; a textbook for students specializ-
[illegible] in construction and transportation machinery] Gusenich-
nye lenty novogo tipa; uchebnoe posobie dlia studentov
spetsial'nosti SM. Moskva, Vses. zaochnyi in-t inzhenerov
zhel-dor. transp., 1963. 123 p. (MIRA 18:6)

ZHEMOCHKIN, Boris Nikolayevich, doktor tekhn. nauk, prof.;
[illegible], I.K., doktor tekhn.nauk, prof., nauchn. red.

[Design of frames] Raschet ram. Moskva, Stroiizdat, 1955.
(MIRA 18:10)
405 p.

PROKOPOVICH, Igor' Yevgen'yevich, doktor tekhn.nauk, prof.; SNITKO, I.K., doktor tekhn.nauk, prof., nauchnyy red.; BORODINA, I.S., red. izd-va; KOROBKOVA, N.I., tekhn. red.

[Effect of prolonged operation on stress and deformation in structures] Vliianie dlitel'nykh protsessov na napriazhennoe i deformirovannoe sostoianiia sooruzhenii. Moskva, Gosstroizdat, 1963. 257 p. (MIRA 16:7)
(Strains and stresses)

FEODOS'YEV, Vsevolod Ivanovich; SNITKO, I.K., red.; SHKLYAR, S.Ya., tekhn. red.

[Strength of materials] Soprotivlenie materialov. Izd.3., ispr. i dop. Moskva, Fizmatgiz, 1963. 539 p. (MIRA 16:12)

(Strength of materials)

VOL'MIR, Arnol'd Sergeyevich. Prinimali uchastiye: TRAPEZIN, I.I.; KURSHIN, L.M.; SNITKO, I.K., red.; BRUDNO, K.F., tekhn. red.

[Stability of elastic systems] Ustoichivost' prugikh sistem. Moskva, Fizmatgiz, 1963. 879 p. (MIRA 16:7)
(Elastic solids)

SNITKO, Ivan Konstantinovich; KUROVA, A.V., red.

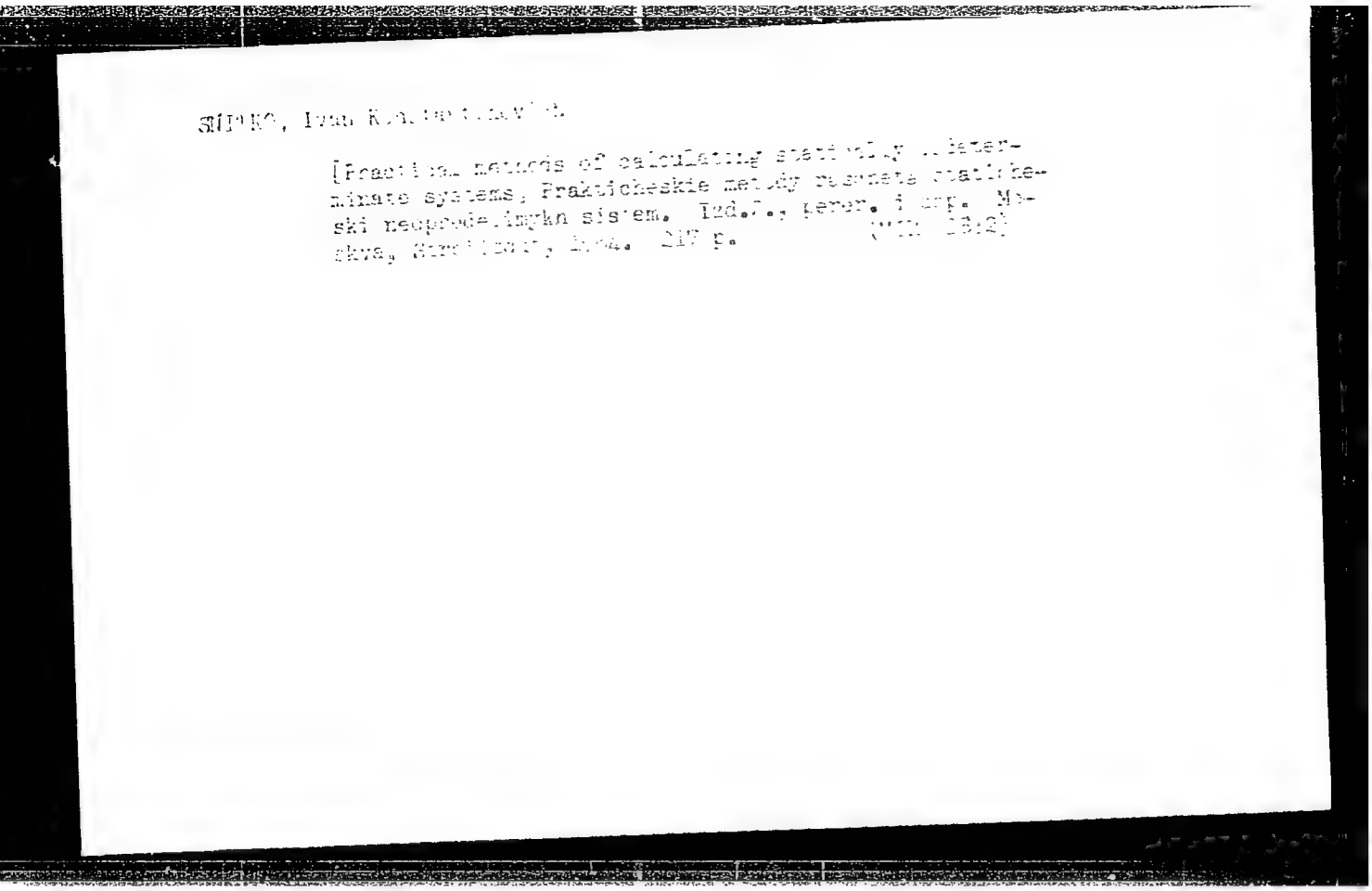
[Structural mechanics of metal elements of machinery; a manual for students in course 4 majoring in "Construction and road machinery and equipment"] Stroitel'naia mekhanika metallokonstruktsii mashin; uchebnoe posobie dlia studentov IV kursa spetsial'nosti "Stroitel'nye i dorozhnye mashiny i oborudovanie" (SM). Moskva, Vses. zaochnyi in-t inzhenerov zhel-dor. transp., 1963. 138 p. (MIRA 17:4)

PANOVKO, Yakov Gilelevich; GUBANOVA, Iskra Ivanovna; SNITKO, I.K., red.

[Stability and vibrations of elastic systems; modern concepts, paradoxes, and errors] Ustoichivost' i kolebaniia uprugikh sistem; sovremennye kontseptsii, paradoksy i oshibki. Moskva, Izd-vo "Nauka," 1964. 336 p. (MIRA 17:5)

UMANSKIY, A.A.; AFANAS'YEV, A.M.; V[illegible], A.F.; [illegible] Yu.F.; KOLMOGOROV, A.I.; MAR'IN, V.A.; NOVITSKIY, V.V.; TIKHOMIROV, Ye.N., retsenzent; SHITKO, I.K., red.

[Collection of problems on the strength of materials] Sbornik zadach po soprotivleniiu materialov. Izd.2., perer. i dop. Moskva, Nauka, 1964. 550 p. (MIRA 18:1)



SIPKO, Ivan Kuzmich

[Practical methods of calculating statistically indeterminate systems] Prakticheskie metody rascheta staticheski neopredelimykh sistem. Izd.2., perer. i dop. Moskva, Gosstroiizdat, 1954. 317 p. (MLR 12:2)

BELYAYEV, Nikolay Mikhaylovich. Prinimali uchastiye: BELYAYEVSKIY, L.A.; KACHURIN, V.K.; KIPNIS, Ya.I.; KOZHEVNIKOV, I.A.; KUSHELEV, N.Yu.; SINITSKIY, A.K.; SMITKO, I.K., red.

[Collection of problems on the strength of materials] Sbornik zadach soprotivleniiu materialov. Izd.9., ispr. Moskva, Izd-vo "Nauka," 1965. 348 p. (MIRA 18:3)

SOYBEL'MAN, Samuil Minas yevich; TROGUN, Moisey Natanovich;
ILIKO, I.K., doktor tekhn. nauk, prof., nauchn. red.

[Examples of the calculation of sectional frames by the moment-distribution method] Primery rascheta slozhnykh ram po metodu raspredeleniia momentov. Moskva, Stroiizdat, 1965. 73 p. (MIRA 18:4)

BREDS, Andrejs; SNITKO, Konstantins; LIELAIS, A.[translator]; ANDERSONE,M., red.; SUDARS, J., tekhn. red.

[Geography of the Latvian S.S.R.; textbook for grade 9 of secondary schools] Latvijas PSR geografija; macibu gramata vidusskolu IX klasei. Riga, Latvijas Valsts izdevnieciba, 1959. 82 p. (MIRA 15:4)

(Latvia--Geography)

SHKREBEL', M.Ya.. Prinimali uchastiye: BLAGOVESHCHENSKAYA, K.A.; DZYUBENKO, G.F.; FRAGAYLOVA, V.I.; ZALESSKAYA, L.O.; KOTSERUBA, L.P.; KOVBASENKO, L.A.; LYAUDANSKAYA, B.Ye.; MILOVZOROV, P.Z. [deceased]; NEZHURBEDA, M.P.; SNITKO, K.I.; YANTSOVA, A.V.. KRESHCHENSKIY, Ye.S., tekhn.red.

[Economy of Kiev Province; a statistical manual] Narodnoe khoziaistvo Kievskoi oblasti; statisticheskii sbornik. Kiev, Gos. stat.izd-vo, 1959. 255 p. (MIRA 13:3)

1. Kiev (Province) Statisticheskoye upravleniye. 2. Nachal'nik statisticheskogo upravleniya Kiyevskoy oblasti (for Shkrebel').
(Kiev Province--Statistics)

SHITKO, K. K.

Artillery gunpowders and charges. ARTILLERIYSKIYE POROKHA I ZARYADY. Translation from the German by B. A. [illegible], edited by K. K. SHITKO. Moscow, State. Publ. of the Defence Ind. 1950. pp. 194.

ANDREYEV, Konstantin Konstantinovich; BELYAYEV, Aleksandr Fedorovich; SNITKO, K.K., prof., doktor tekhn.nauk, retsenzent; AVANESOV, D.S., dotsent, kand.khim.nauk, retsenzent; GOL'BINDER, A.I., doktor tekhn.nauk, red.; LOSEVA, G.F., izdat.red.; GARNUKHINA, L.A., tekhn.red.

[Theory of explosives] Teoriia vzryvchatykh veshchestv. Moskva, Gos.nauchno-tekhn.izd-vo Oborongiz, 1960. 595 p. (MIRA 14:1)

(Explosives)

BOGOYAVLENSKAYA, L.N.; OSTROUMOV, E.Ye.; SMITKO, L.P.

Study of the stability of electric power transmission between the Stalingrad Hydroelectric Power Station and Moscow. Sbor. rab. po vop. elektromekh. no.6:84-104 '61. (MIRA 14:9)
(Moscow--Electric power) (Stalingrad Hydroelectric Power Station)

SIRYY, N.S.; OSTROUMOV, E.Ye.; SNITKO, L.P.

Effect of T_e and T_{do} time constants on the dynamic stability of an electric power transmission system. Sbor.rab.po vop.elektromekh.no. 8:161-167 '63. (MIRA 16:5)

(Electric power distribution)

KASHTELYAN, V.Ye.; G[illegible], ...; SMITKO, I.; GURSHENBERG, G.R.

Effect of the parameters of excitation systems on the static and dynamic stability of turbogenerators with forced cooling. Izv. vys. ucheb. zav.; elektromekh. no.10:153-167 '[illegible]. (MIRA 17:8)

137-58-2-4171

Translation from Referativnyy zhurnal, Metallurgiya, 1958, Nr 2, p 272 (USSR)

AUTHORS. Snitko, M.N., Belan, N.I., Novikov, V.V.

TITLE: The High-temperature-resistant Cast Steel 20KhML (Litaya teploustoychivaya stal' 20KhML)

PERIODICAL: V sb.: Prochnost' metallov. Moscow, AN SSSR, 1956, pp 110-111

ABSTRACT. Data are given on the properties of two industrial heats (from a basic electric furnace) of the cast Cr-Mo steel 20KhML. Described are the composition, mechanical properties before and after heat treatment, coefficient of linear expansion, mechanical properties at high temperatures (up to 650°C), and the results of creep and long-term strength tests made at 470, 510, and 550°. Steel 20KhML, having a 5-6 point grain size, does not readily graphitize. Its nominal creep limit (at a deformation rate of $1 \cdot 10^{-5}$ percent per hour) is 16.2 kg/mm^2 at 470°, 6.6 kg/mm^2 at 510°, and 2.9 kg/mm^2 at 550°. Its long-term rupture strength (with rupture at the end of 100,000 hours) is 26 kg/mm^2 at 470°, 14 kg/mm^2 at 510°, and 6 kg/mm^2 at 550°. After heat treatment steel 20KhML does

Card 1/2

137-58-2-4171

The High-temperature-resistant Cast Steel 20KhML

not tend toward heat embrittlement (in the 450-550° range) whether or not subjected to stress, though the a_k value does decline at subfreezing temperatures. When normalized, this steel has a slight tendency toward tempering brittleness, which is especially evident at -20 and -50°, when a tempering at 400 and 600° has been followed by a slow cooling.

A.S.

1. Steel--Structural analysis 2. Steel--Mechanical properties

Card 2/2

81526
SOV/137-59-5-10913

18.1150
18.7100

Translation from: Referativnyy zhurnal, Metallurgiya, 1959, Nr 5, p 210-211 (USSR)

AUTHORS: Snitko, M.N., Belan, N.I., Novikov, V.V.

TITLE: Steel for Cast Parts of Steam Turbines

PERIODICAL: Tr. Nevsk. mashinostr., z-da, 1958, Nr 4, pp 59 - 77

ABSTRACT: The authors carried out investigations of 20KhML steel with respect to the macro- and microstructure, mechanical properties (σ_b, σ_s, δ, ψ, a_k) at 20° - 650°C (after heat treatment), the coefficient of linear expansion at 100° - 600°C, a_k at +20 to -100°C after tempering with slow and rapid cooling, after holding at 450° - 550°C for 100 - 5,000 hours and after creep tests; σ_{sm} and σ_{ex} at 470°, 510° and 550°C were also investigated. The 20KhML steel was cast into cross-shaped specimens up to 750 mm, with wall thickness of 30 - 70 mm. Heat treatment of the specimens consisted in normalization from 890° - 910°C; tempering at 640° - 660°C, cooling to 300°C in a furnace and then in air. It was established that cast 20KhML

Card 1/2

S1526

Steel for Cast Parts of Steam Turbines

SOV/137-59-5-10913

steel after normalization and tempering 1) had high σ_b, σ_s, δ, ψ and [illegible] which were maintained at a sufficiently high level up to 550°C; 2) was not prone to graphitization in holding up to 6,000 hrs at 450° - 550°C; 3) was not prone to heat brittleness at 450° - 550°C in stressed or non-stressed state; 4) reduced considerably a_k at -100°C; 5) had only slight proneness to temper brittleness at 400° and 600°C; 6) had, at temperatures of 470°, 510° and 550°C, values of σ_{sm} - 16.2, 6.6, 2.9 kg/mm^2 (1.10^{-5}%/hr) and σ_{ex} 26.0, 14.2, 6.0 kg/mm^2 (100,000 hrs), respectively.

T.F.

Card 2/2

IEVIN, Ye.Ye., kand.tekhn.nauk; ZEMZIN, V.N., kand.tekhn.nauk; MASALEVA, Ye.N., inzh.; SNITKO, M.N., inzh.; BABAYEVA, Ye.V., inzh.; SOLDATOVA, A.S., inzh.

Economically alloyed EI402M-L cast steel for turbines and equipment operating with metal temperatures up to 650°C. Energomashinostroenie 9 no.1:30-33 Ja '63. (MIRA 16:3)
(Steel) (Gas turbines)

SNITKO, N.

5684. SNITKO, N. Kolkhoznyy Sad. (kolkhoz im. i. v. Michurina, Krasnoarmeyskogo Rayona. Krasnodarskogo Kraya. M., izd-vo M-VI Sel'skogo Khozyaystva S.S. S.R. 1954) I l., Slozh. v (8) s., s Ill. 21sm Glav. Upr. s-kh Propagandy i Nauki M-va Sel'skogo Khozyaystva SSSR 200,000 Ekz. 40k-Avt. Ukazany Kontse.-(55-1074) 634.1/7 st (47.893)

SO: Knizhnaya, Letopis, Vol. 1, 1955

SNITKO, N.F.

VOROB'YEVA, N.N.; KOLESNIKOV, M.A., kand.sel'skokhoz.nauk; MOTOVILOV, B.A., kand.sel'skokhoz.nauk; PODGAYEVSKAYA, A.A., kand.sel'skokhoz.nauk; PRIYMAK, A.K., doktor sel'skokhoz.nauk; RYADNOVA, I.M., kand.sel'skokhoz.nauk; SERGEYEV, L.M., kand.sel'skokhoz.nauk; SNITKO, N.F., kand.sel'skokhoz.nauk; STOROZHENKO, Ye.M.; TROSKVICH, G.V., kand.sel'skokhoz.nauk; ZAVADVOROV, S.M., red.; KOFANOV, P.F., tekhn.red.

[Fruit culture] Plodovodstvo. Krasnodarskoe knizhnoe izd-vo, 1957. 267 p. (MIRA 12:5)

(Fruit culture)

SNITKO, Nikolay Fedorovich-kand. sel'khoz. nauk; SERPUKHOVITINA, Serafima Frolovna, kand. sel'khoz. nauk; STOROZHENKO, Yekaterina Moiseyevna, kand. sel'khoz. nauk; GAVRILOV, V.P., red.; KHLOBORDOV, V.I., tekhn. red.

[Orchards and vineyards on the farmers' personnal plots]Priusadebnyi plodovyi sad i vinogradnik. 2. izd. ispr. i dop. Krasnodar, Krasnodarskoe knizhnoe izd-vo, 1960. 159 p. (MIRA 16:1)

(Fruit culture) (Viticulture)

USSR/Engineering May 1947
Bridges
Strains

"Stability of Bridge Frames Under the Effect of Multiple Loads," Professor N. K. Snitko, Dr of Technical Sciences, Member of the Builder's Association, 3½ pp

"Vest Inzher i Tekh" No 5

Mathematical discussion on the calculation of strains affecting the framework of a bridge structure under several loads at the same time. The author states that, according to his method, it is possible to determine the critical load for

26T24

USSR/Engineering (Contd) May 1947

a bridge much better than by previous methods.

26T24

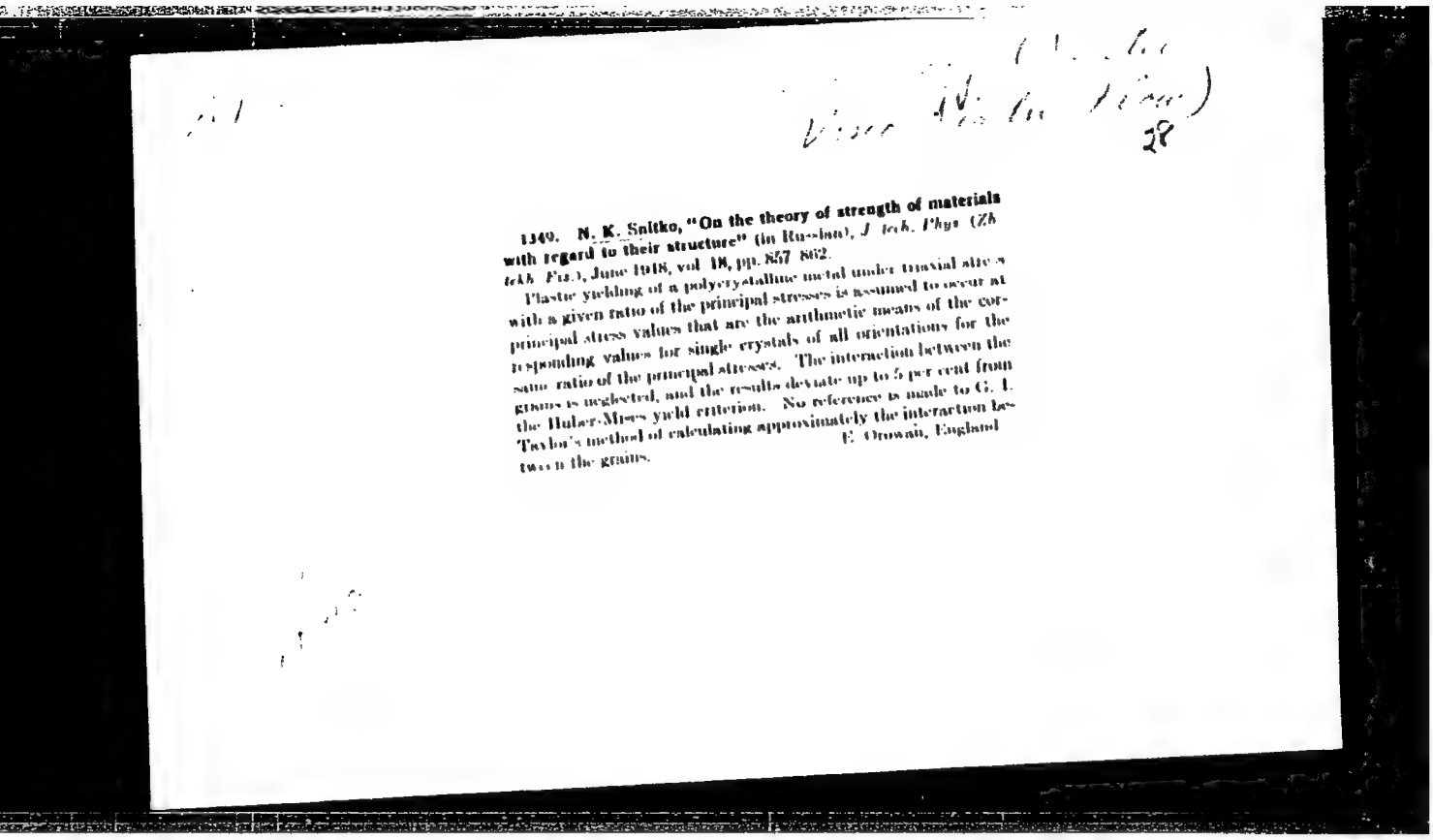
BITKO, N.K.

30151

Prodol,nly iegib styerzhnyey v uprugoy sryedye. inform. byullyetyen, akad. (voyen-tracp, akad. vooruzh. sil im kaganovicha), No. 18, 1948, C. 22-27

D. Fieika

SO: LETOPIS' NO. 34



28

1349. **N. K. Snitko, "On the theory of strength of materials with regard to their structure"** (in Russian), *J. tekh. Phys.* (*Zh. tekh. Fiz.*), June 1948, vol 18, pp. 857-862.

Plastic yielding of a polycrystalline metal under triaxial stress with a given ratio of the principal stresses is assumed to occur at principal stress values that are the arithmetic means of the corresponding values for single crystals of all orientations for the same ratio of the principal stresses. The interaction between the grains is neglected, and the results deviate up to 5 per cent from the Huber-Mises yield criterion. No reference is made to G. I. Taylor's method of calculating approximately the interaction between the grains.

E. Orowan, England

SMITKO, N. K.

29842

Myetody raschyeta mostovykh arok so skvoznym nadarochnym stroyeniyem. Trudy Akad. (Voyen.-Transp. akad. vooruzh. sil im kaganovicha), vyp. 17, 1949, s. 22-47

SO: L E T O P I S ' NO. 40

SNITKO, N. K.

30469

K tyeorii vymuzdyennykh kolyebaniy mostovykh balok pri dyeystvii lyuboy vozmushchayushchyey sily. Inform. byullyetyen' Akad. (Voyen. - transp. akad. Vooruz. Sil im Kaganovicha), No 19, 1949, S. 16-25.

V. Avtomobil'nyy transport. Avtotraktornaya Promyshlyennost'. Mototsikly

SO: Letopis' No. 34

SNITKI, N.K.

The Committee on Stalin Prizes [of the Council of Ministers USSR] in the fields of science and inventions announces that the following scientific works, popular scientific books, and textbooks have been submitted for competition for Stalin Prizes for the years [illegible] and 1953. (Sovetskaya Kultura, Moscow, No. 22-40, 20 Feb - 3 Apr 1954)

Name	Title of Work	Nominated by
Snitko, N.K.	"Arrangement of Rod Systems" "Methods of Design of Installations Under Vibration or Shock"	Ministry of Defense USSR

SO: Moscow, 7 July 1954

SI[illegible], V. A.

Technology

Durability of rod systems, Moskva, 1952.

9. Monthly List of Russian Accessions, Library of Congress, December 1952~~1953~~, Uncl.

SNITKO, N.K., professor, doktor tekhnicheskikh nauk.

Rigidity of compressed-bent rod systems. Sbor. LIIZHT no.144:169-195 '52. (MLRA 8:4)
(Arches) (Structures, Theory of)

PHASE I TREASURE ISLAND BIBLIOGRAPHICAL REPORT AID 407 - I

BOOK Call No.: AF595007

Author: SNITKO, N. K., Prof. Doc. of Tech. Sci.

Full Title: METHODS OF CALCULATION OF STRUCTURES FOR VIBRATION AND IMPACT

Transliterated Title: Metody rascheta sooruzheniy na vibratsiyu i udar

Publishing Data

Originating Agency: None

Publishing House: State Publishing House of Literature on Construction and Architecture

Date: 1953 No. pp.: 288 No. of copies: 5,000

Editorial Staff

Editor: Gol'st, G. K., Kand. of Tech. Sci. Tech. Ed.: None

Editor-in-Chief: None Appraiser: None

Text Data

Coverage: The author considers effective methods of calculation of engineering constructions for impact. He describes methods he himself has evolved of initial parameters, moments, and displacements in the theory of oscillation of beams and free frames. He proposes a general solution of the problem of oscillation of frames of

Metody rascheta sooruzheniy na vibratsiyu i udar AID 407 - I

		PAGES
Ch. V	Oscillation of Bar Systems with Uniformly Distributed Masses	156-238
Ch. VI	Vibration of Compressed and Bent Beams and Frames	239-259
Ch. VII	Dynamic Stability. Longitudinal Oscillations of Elastic Bars	260-281
	Bibliography	282-285

Purpose: This book is destined for engineers and designers interested in the calculation of engineering structures for vibration and shock.
Facilities: None
No. of Russian and Slavic References: 21 before 1938 and 46 after that date.
Available: A.I.D., Library of Congress.

SNITKO, N.K., professor, doktor tekhnicheskikh nauk (Leningrad)

General solution of the problem of periodic repeated impacts. Issledovaniia po teorii sooruzhenii. Sbornik statei. no.6:45-54 '54. (MLRA 7:11)
(Structures, Theory of) (Strains and stresses) (Elastic plates and shells)

124-57-1-982

Translation from: Referativnyy zhurnal, Mekhanika, 1957, Nr 1, p 136 (USSR)

AUTHOR: Snitko, N. K.

TITLE: Longitudinal Vibrations of Beams Having a Distributed Mass and Elastically Yielding Ends (Prodol'nyye kolebaniya sterzhney s raspredelennoy massoy pri nalichii uprugoy podatlivosti kontsov)

PERIODICAL: V sb.: Vopr. dinamiki i dinamicheskoy prochnosti. Nr 3. Riga, Izd-vo AN LatvSSR, 1955, pp 75-85

ABSTRACT: The paper sets forth a solution of the problem of the free longitudinal vibrations of a beam having a uniform section and a uniformly distributed mass according to the method of the initial parameters. Examples examined comprise beams with two free ends, with one free end and one fixed end, and, finally, the case of a beam having one end free and the other elastically held. As for the more general case (elastic tie-downs along the span, distributed and concentrated mass, etc.) the problem has already been solved by the reviewer (Sb. nauch. tr. Vses. akad. zh.-d. transp., Nr. II. Moscow, 1940, pp 219-252). Further on, an approximate expression is given for the vibratory frequency of a pole, defined as a weightless beam, supported at its lower end by a yielding support and the reduced

Card 1/2

124-57-1-982

Longitudinal Vibrations of Beams Having a Distributed Mass (cont.)

mass of the pole at its upper end; the equation for the said reduced mass is established, and it is underscored that the mass reduction coefficient during the process of driving of the pole must be considered variable. A general scheme for the vibrational-impact calculation of the driving of the pole is traced within the framework of linear theory.

N. I. Bezukhov

1. Beams--Vibration--Mathematical analysis

Card 2/2

SNITKO, Nikolay Konstantinovich, professor, doktor tekhnicheskikh nauk; BELYAYEV, A.I., kandidat tekhnicheskikh nauk, dotsent, redaktor; KAPLAN, M.Ya., redaktor; PUL'KINA, Ye.A., tekhnicheskiy redaktor.

[Stability of oblate and oblately curved rod systems] Ustoichivost' szhatykh i szhato-izognutykh sterzhnevykh sistem. Leningrad, Gos. izd-vo lit-ry po stroit. i arkhitekture, 1956. 206 p. (MLRA 9:6)
(Structures, Theory of)

124-58-6-7039

Translation from: Referativnyy zhurnal, Mekhanika, 1958, Nr 6, p 108 (USSR)

AUTHOR: Snitko, N. K.

TITLE: Strain Analysis of Bars Subjected to Combined Compression and Bending in an Elastic Medium (Deformatsionnyy raschet szhato-izognytykh sterzhney v uprugoy srede)

PERIODICAL: V sb.: Issledovaniya po teorii sooruzheniy. Nr 7, Moscow, Gosstroyizdat, 1957, pp 199-207

ABSTRACT: An equation is evolved for the line of flexure of a compressed semi-infinite beam resting on an elastic foundation and loaded at one end by a force and a bending moment.

A. A Kurdyumov

1. Beams--Stresses 2. Mathematics--Applications

Card 1/1

SNITKO, N.K., doktor tekhn. nauk, prof. (Leningrad).

Kinematic method used in solving problems of stability and deformation strength of complex bar structures. Issl. po teor. sooruzh. no.7:209-223 '57. (MLRA 10:9)
(Strength of materials) (Graphic statics) (Kinematics)

SNITKO, N.K. (Leningrad)

Determining the dynamic pressure of soil on a supporting wall considered as a system with one degree of freedom. Stroi. mekh. i rasch. soor. 1 no.4:12-17 '59. (MIRA 12:10)
(Foundations) (Soil mechanics)

SNITKO, N.K. (g.Leningrad)

Dynamic impact stresses in foundations. Osn., fund.i mekh. grun. no.5:4-6 '59. (MIRA 12:12)
(Foundations) (Strains and stresses)

SNITKO, N.K., doktor tekhn. nauk prof. (Leningrad)

Dynamics of solid bulkheads and foundations subjected to impact loads. Issl. po teor. sooruzh. no.8:37-53 '59. (MIRA 12:12)
(Foundations) (Explosions)

report presented at the 1st All-Union Congress of Theoretical and Applied Mechanics, Moscow, 27 Jan - 3 Feb 60.

234. G. I. Pshenichnov (Perm): Large deflections of reinforced shallow cylindrical shells.

235. Yu. P. Rabinovich (Moscow), Th. M. Rabotnov (Novosibirsk): Creep strength of turbine disks.

236. A. I. Rabinovich (Odessa): Flow and consolidation of sands under the action of seepage forces.

237. Th. M. Rabotnov (Novosibirsk): Creep.

238. R. M. Rapoport (Leningrad): Some problems in the theory of elasticity concerning the design of rock foundations.

R. M. Rapoport (Leningrad): Some different equations of structural mechanics.

[illegible]

Sh. A. Rakhmatulin (Moscow): On the propagation of elastic-plastic waves in a half-space.

Sh. A. Rakhmatulin (Moscow): Propagation of disturbances in continuous media.

V. P. Reich (Sverdlovsk): Earth pressure on flexible retaining walls.

V. L. Rvaiter (Dnepropetrovsk): On the pressure of a punch on an elastic half-space.

P. A. Reitenbakh (Moscow): Types of high molecular and dispersed structure and their characteristic mechanical properties.

B. Renne (Prague): On the influence of the maximum principal stress on the fatigue strength.

V. G. Rekach (Moscow): The application of the method of homogeneous solutions to some two-dimensional problems of the theory of elasticity.

A. R. Rzhanitsin (Moscow): Some three-dimensional problems of limit equilibrium in rigid, plastic solids.

M. I. Rozovskii (Dnepropetrovsk): On the application of the Galerkin-Sobolev principle to Arutiunian's creep theory of concrete.

M. I. Rozovskii (Dnepropetrovsk): Some problems of the integral operator theory of creep.

A. O. Rozovskii (Leningrad): [illegible]

[illegible]

D. D. Sarafa (Leningrad): The experimental study of the deformations of rock foundations.

G. N. Savin (Kiev): The determination of the deflections of a finely supported plate by the method of successive approximations.

V. A. Sachkov (Kiev): Torsion of anisotropic prismatic bars of elongated cross section.

Ye. A. Sedov (Kalinin): The impact of a double punch on a half plane.

Ye. V. Sviridov (Kiev): The use of similarity considerations for the investigation in the design of shells by successive approximations.

Sh. N. Segal (Leningrad): Stability of cellular structures built on soft ground.

S. I. Senashkin (Moscow): Bending of thin ring-joined plate supported by an elastic layer of finite thickness.

B. R. Seth (Khartoum): Finite bending of plates into cylindrical shells.

A. P. Sinitsyn (Moscow): A beam on a two-layer half space beyond the elastic limit.

V. P. Skudrzyk (Leningrad): Some problems of creep and consolidation of saturated soils.

V. G. Slivinskii (Moscow): Determination of the natural frequencies of plates of constant and variable thickness.

R. S. Sorokin (Leningrad): Dynamic problems of the design of foundations under impact loads.

[illegible]

I. F. Sokolovskii (Moscow): On some problems of the theory of plasticity and soil mechanics.

N. A. Sokolovskii (Petrozavodsk): On a class of solutions of boundary value problems in plasticity.

E. A. Sorokin (Moscow): The effect of internal friction on the stability of beams and plates under impulsive loading.

P. I. Spiridonov (Dnepropetrovsk): Stresses in elliptical dams subjected to internal pressure.

SNITKO, Nikolay Konstantinovich, prof., doktor tekhn.nauk; RABINOVICH, I.M., prof., doktor tekhn.nauk, retsenzent; FILIN, A.P., prof., doktor tekhn.nauk, nauchnyy red.; KAPLAN, M.Ya., red.izd-va; VORONETSKAYA, L.V., tekhn.red.

[Dynamics of structures] Dinamika sooruzhenii. Leningrad, Gos. izd-vo lit-ry po stroit., arkhit. i stroit.materialam, 1960. 355 p. (MIRA 13:7)

1. Chlen-korrespondent AN SSSR (for Rabinovich).
(Structures, Theory of) (Vibration)

AKIMOV-Peretts, D.D.; SNITKO, N.K.(Leningrad)

Experimental studies of impact deformations and stresses in beams. Stroi.mekh.i rasch.soor. 2 no.3:30-34 '60. (MIRA 13:6)

(Strains and stresses) (Girders)

FLORIN, Viktor Anatol'yevich [deceased]; SNITKO, N.K., prof., zasl. deyatel' nauki i tekhniki RSFSR, nauchnyy red.; SIPIDIN, V.P., kand. tekhn. nauk, nauchnyy red.; ROTENBERG, A.S., red. izd-va; VORONETSKAYA, L.V., tekhn. red.

[Principles of soil mechanics] Osnovy mekhaniki gruntov. Leningrad, Gos. izd-vo lit-ry po stroit., arkhit. i stroit. materialam. Vol.2. [Deformation and stability of the foundations of buildings] Deformatsiia i ustoichivost' osnovanii sooruzhenii. 1961. 543 p. (MIRA 15:2)
(Foundations) (Soil mechanics)

SNITKO, N.K., prof., doktor tekhn.nauk, zasluzhennyy deyatel' nauki i tekhniki (Leningrad)

Longitudinal eccentric impact along a compressed column. Issl. po teor. sooruzh. no.10:46-56 '61. (MIRA 14:8)
(Elastic rods and wires) (Impact)

SNITKO, N.K.; KANDAUROV, I.I.

Stability of the motion of a trailer in case of transverse vibrations. Izv.AN Arm.SSR. Ser.tekh.nauk 15 no.2:11-22 '62. (MIRA 15:6)

1. Voyennaya akademiya tyla i transporta, g. Leningrad.
(Truck trailers—Vibration)

SNITKO, Nikolay Konstantinovich, zasl. deyatel' nauki i tekhniki RSFSR, prof., dokt.tekhn.nauk; KANDAUROV, I.I., doktor tekhn. nauk, nauchnyy red.; ROTENBERB, A.S., red. izd-va; VORONETSKAYA, L.V., tekhn. red.

[Calculation of framed structures using iterative methods for strength and stability] Raschet rammykh sooruzhenii iteratsionnymi metodami na prochnost'. Leningrad, Gosstroiizdat, 1962. 233 p. (MIRA 15:7)

(Structural frames)

SNITKO, Nikolay Konstantinovich, zasl. deyatel' nauki i tekhn.RSFSR, doktor tekhn.nauk, prof.; GORBUNOV-POSADOV, M.I., prof., retsenzent; SHEKHTER, O.Ya., prof., retsenzent; KLEYN, G.K., prof., retsenzent; KANDAUROV, I.I., doktor tekhn.nauk, prof., nauchnyy red.; REYZ, M.B., red. izd-va; PUL'KINA, Ye.A., tekhn. red.

[Static and dynamic earth pressure and the design of retaining walls] Staticheskoe i dinamicheskoe davlenie gruntov i raschet podpornykh stenok. Leningrad, Gosstroiizdat, 1963. 294 p. (MIRA 16:8)

(Earth pressure) (Retaining walls)

SNITKO, N.K.

Determining lateral earth pressure by equations of the compatibility of shear displacements. Osn., fund. i mekh. grun. 5 no.1:4-7 '63. (MIRA 16:1)

(Earth pressure)

SNITKO, N.K.

Vibration of a thin rigid wall in a soil medium. Osn. fund.i mekh.grun. (MIRA 17:2)
6 no.1 1-3 '64.

SNITKO, O.V.

LYASHENKO, V.I.; SNITKO, O.V.

Effect of molecular absorption on the photoconductivity of semiconductors. Trudy Inst.fiz. AN URSR no.5:65-76 '54. (MLRA 7:12)
(Molecular dynamics) (Photoconductivity) (Semiconductors)

SNITKO, O. V.,

LYASHENKO, V.I.; SNITKO, O.V.; SEMENYUCHENKO, I.M.

Effect of molecular absorption on the photoconductivity of semiconductors. Part 2. Kinetics and mechanism of phenomena occurring in copper oxide. Trudy Inst.fiz. AN URSR no.5: 77-86 '54. (MLRA 7:12)
(Molecular dynamics) (Photoconductivity) (Semiconductors) (Copper oxide)

LYASHENKO, V.I.; SNITKO, O.V.

Effect of molecular adsorption on the photoconductivity of semiconductors. Part 3. Kinetics of photoconductivity of cuprous oxide subjected to blue, green and red light radiation. Trudy Inst.fiz.AN URSR no.6:132-140 '55. (MLRA 9:8)
(Copper oxides--Electric properties)(Photoconductivity)

SHIKO, O.V. Cand Phys-Math Sci (diss) "Effect of the distribution of molecules and external electric field on the photoconductivity of semi-conductors." Kiev, 1957 7 pp 20 cm. (Acad Sci USSR, Inst of Phys) 120 copies

(KL, 11-57, 96)

Snitko, O.V.

The effect of molecular adsorption on the field effect in cuprous oxide. O. V. Snitko. *Ukrain. Fiz. Zhur.* (Suppl.) 2, No. 2, 68-9(1957).—Curves are presented for the field effect for Cu_2O that had been degassed *in vacuo* at 10^{-4} mm. Hg, and for Cu_2O that had adsorbed EtOH at atm. pressure, where the partial pressure of EtOH was 28 mm. Hg. The curves differ from each other; in general, the slope is greater after the Cu_2O adsorbed the EtOH.
Werner Jacobson

3
4E4g

RM MT 1/1

SNITKO, O.V.; GRITSENKO, Yu.I.

Longitudinal photoconductivity of cuprous oxide single crystals.
Ukr.fiz.zhur. 2 no.2:suppl:70-72. '57. (MLRA 10:7)

1. Institut fiziki AN URSR.
(Copper oxides)

Snitko, O.V.

Effect of the adsorption of molecules and the external electric field on the photoconductivity of semiconductors. V. I. Lyashenko and O. V. Snitko. *Radiotekh. i Elektron.* 2, 269–77(1957); cf. *Trudy Inst. Fiz., Akad. Nauk Ukr. S.S.R.* 6, 132(1955).—The effect of adsorbed mols. and applied e.m.f. (E) on the photocond. of Cu_2O and MoS_2 was studied at temps. as low as −112 to −150° and e.m.fs. up to 2 kv. Results are tabulated and graphed. Values of the quantities a_1, a_2, t_1, and t_2 in the photocurrent (I) equation $I = (a_1t_1 + a_2t_2)L$ for one sample of Cu_2O were 3×10^2, 2.6×10^2, 180 microsec., and 91 microsec., resp., at 10^{-4} mm. pressure and 1×10^4, 3.3×10^3, 380 microsec., and 105 microsec., resp., in the presence of EtOH vapor at 6-mm. pressure. Varying E from zero to 1.8 kv. with another sample of Cu_2O had no effect on t_1 or t_2, but when the temp. was decreased from +23 to −24°, t_1 increased from 0.0014 to 0.0017 and t_2 increased from 0.014 to 0.038. As E varied from +1.8 to −1.8 kv., a_1 and a_2 increased about 14% at +23° and 100% at −24°. For a sample of MoS_2 at −112° ($E = 0$) a_1, a_2, t_1, and t_2 were 11,000, 840, 0.0053 sec., and 0.051 sec., resp. When E varied from +2 to −1 kv., a_1 fell from 25,000 to 9500 and a_2 fell from 1320 to 760; t_1 and t_2 were unchanged. The relative change of I (and of dark current) caused by application of an external pos. e.m.f. of 1 kv. to the metal electrode of an electron-conducting MoS_2 cell was max. at −110°, zero at −140°, and neg. at still lower temps. It is suggested that t_1 and t_2 are detd. by the lifetime of free electrons in vol. levels. O adsorbed on Cu_2O decreases the neg. surface charge and increases the no. of electrons in acceptor levels; the observed increase of a_2 is due to this. The decrease of a_1 is due to the fall in the no. of free vacancies in the acceptor levels. Hole photocond. in MoS_2 is similar in principal to that in Cu_2O. The change of sign of the effect on transition to electron photocond. is due to the presence at the MoS_2 surface of donor levels which produce a pos. charge on the surface. J. W. Loweberg, Jr.

Distr: 4E4c/4E3d

SNITKO, O. V.

"Effect of Molecular Adsorption and External Electric Field on Photoconductivity of Semiconductors," by V. I. Lyashenko and O. V. Snitko, Physics Institute, Academy of Sciences Ukrainian SSR, Radiotekhnika i Elektronika, No 3, Mar 57, pp 269-277

Investigation of the effect of adsorption and external electric field on the kinetics of photoconductivity of cuprous oxide and molybdenum sulfide was carried out in considerable detail.

The samples of cuprous oxide were made in the form of plates, which were heated in vacuum at 1,000°C and etched to a depth of 0.1 mm, thus leaving a thickness of only 100 to 200 microns. The hole- and electron-conductivity molybdenum sulfide samples were treated to secure a thickness of 50 to 100 microns. The samples were subjected either to high vacuum or gas or vapor pressure to secure the desired surface adsorption. The phenomenon of photoconductivity in the molybdenum sulfide resembled in many respects the similar effect in cuprous oxide. The article describes the methods used in conducting the experiment, and presents results obtained and an analysis of the data secured.

This report was delivered in November 1955 at the All-Union Conference on Semiconductors in Leningrad. (U)

Sum. 1374

57-1-6/30

AUTHOR: Snitko, O. V.

TITLE: The Influence of Molecular Adsorption on the Longitudinal Photoconductivity of Cuprous Oxide (Vliyaniye adsorbtsii molekul na prodol'nuyu fotoprovodimost' zakisi medi).

PERIODICAL: Zhurnal Tekhnicheskoy Fiziki, 1958, Vol. 28, Nr 1, pp. 35-44 (USSR)

ABSTRACT: The author starts from the fact that if the photocurrent carriers are entrained by means of the field into the interior of the semiconductor or to its boundaries it is possible to investigate in the one or other case the influence of the conditions at the photoconductivity limit. Here the influence of the adsorption of molecules on the longitudinal photoconductivity and on the (+)-photo-e.m.f. (electromotive force) in cuprous oxide is investigated.The investigations were carried out with cuprous oxide slabs of about 0,2 mm (separated from source copper). They were heated in vacuum at 1000°C and were etched to the mentioned thickness with concentrated nitric acid. On both sides of the cuprous oxide a semitransparent gold layer was deposited by means of evaporation in vacuum. For the adsorption only the exposed electrode was open. The exposure was carried out by means of interference light filters. The kinetics of the photoconductivity was investigated according to the method of partial periods using

Card 1/4

a taumeter (ref. 6). The investigations were carried out with a great number of samples and the results were equal. The results obtained were interpreted as follows: 1. The effective depth of the penetration of light 1/k is with Cu_2O, at λ = 530mμ equal to 3μ and at λ= 430 mμ equal to 0,2μ (ref. 9). Therefore +V(photocurrent carriers are pressed to the boundary) the thickness of the semiconductor (where the photoconductivity phenomenon takes place) is determined by 1/k. With -V the photocurrent carriers are entrained by the field into the depth of the sample. The author shows that anyway with -V the photoconductivity phenomenon takes mainly place within the range of the screening length ($\frac{1}{\chi} \simeq 30\mu$). 2.- The presence of two proper times in Cu_2O proves the existence of two kinds of local levels by which the photoelectrons displaced by light into the zone of conductivity recombine. $\frac{1}{\chi}$ is the length of screening. The experiments carried out here show that in the depth of the sample shortterm levels are present. The experiments with Cu_2O monocrystals showed that at the transition from +V to -V both coefficients a_1 and a_2 become essentially greater. This is proof

that both the shortterm and longterm levels are volume levels. The author further shows that the kinetics of the photoconductivity can be well approximated by means of two proper times (with an exactness of up to 5%).3.-As the photocurrent carriers, when they are entrained into the depth of the sample at -V, nevertheless remain essentially within the range of the surface-charge field; thus the rather great influence remaining from the adsorption of molecules on the photoconductivity at -V can be explained. The experiments showed that with adsorption a decrease of darkness conductivity as well as an increase of the short proper time τ_1 takes place. The constant character of τ_2 possibly is connected with the fact that a recombination of longterm levels does not depend on the concentration of dark holes (ref. 10). τ_2 is the long proper time. 4.- The observations given under 3.- refer to samples with a thick gold layer, $b = 4.10^{-6}$ + + 10^{-5} cm. The results of the experiments with thin gold electrodes, $b < 4.10^{-6}$ are more difficult to explain. Apparently here the anomalous characteristics of the gold film with fine dispersion (melkodis persnaya) play an essential rôle where the contact with cuprous oxide is not continuous and forms a system of point-contacts. An investigation in this direction was not

The Influence of Molecular Absorption on the Longitudinal Photo-conductivity of Cuprous Oxide. 57-1-6/30

the task of the present work. V. I. Lyashenko showed interest in the work. he is Scientific Chief-Collaborator. (starshiy nauchnyy sotrudnik). There are 11 figures, 4 tables, and 11 Slavic references.

ASSOCIATION: Institute for Physics AN USSR (Institut fiziki AN SSSR, Kiyev).

SUBMITTED: April 5, 1957

AVAILABLE: Library of Congress

Card 4/4

RASHBA, E.I.; SMITKO, O.V.; TOLPYGO, K.B.

First All-Union Conference on Photoelectric and Optical Phenomena in Semiconductors. Zhur.tekh.fiz. 28 no.12:2696-2706 D '58. (MIRA 12:2)

1. Institut fiziki AN USSR, Kiyev.
(Semiconductors)

RASHBA, E.I.; SMITKO, O.V.; TOLPYGO, K.B.; LUBCHENKO, A.F.; SHEYNKMAN, M.K.; LASHKAREV, V.Ye., akademik, otv.red.; KISINA, I.V., red. izd-va; MATVEYCHUK, A.A., tekhn.red.

[Photoelectrical and optical phenomena in semiconductors. Works of the First All-Union Conference on Photoelectrical and Optical Phenomena in Semiconductors held at Kiev, November 20-26, 1957] Fotoelektricheskie i opticheskie iavleniia v poluprovodnikakh. Trudy Pervogo Vsesoiuznogo soveshchaniia po fotoelektricheskim i opticheskim iavleniiam v poluprovodnikakh, Kiev, 20-26 noiabria 1957 g. Kiev, Izd-vo Akad.nauk USSR, 1959. 403 p. (MIRA 12:11)

1. Akademiya nauk SSSR. Komissiya po poluprovodnikam. 2. AN USSR (for Lashkarev).

(Semiconductors)

SNITKO, O.V.

Effect of an external electric field on surface recombination and condenser photo-emf of p-type silicon. Fiz. tver. tela 1 no.6:980-983 Je '59. (MIRA 12:10)
(Silicon) (Photoelectricity)

LYASHENKO, V. I., SMITKO, O. V. and LITOVCHENKO, V. G.

"Electron States on Si and Ge Surface."

report presented at the Intl. Conf. on Semiconductor Physics, Prague, 29 Aug - 2 Sep 1960.

Inst. of Physics, Acad. Sci. Ukr SSR Kiev

Snitko, O.V.

81948
S/181/60/002/04/06/034
B002/B063

24.7700

AUTHORS: Litovchenko, V. G., Snitko, O. V.

TITLE: Surface Properties of Silicon

PERIODICAL: Fizika tverdogo tela, 1960, Vol. 2, No. 4, pp. 591-604

TEXT: From n-type silicon single crystals, plates were cut perpendicular to the [111] direction and etched with a polishing etching agent. Four indium electrodes were attached to the plate, and a thin mica foil together with a metal electrode were applied to one side. The circuit diagram of the measuring arrangement is reproduced in Fig. 1. Oscilloscopes of the types 25И (25I) and ЭО-53 (EO-53) were used for the measurements. The authors investigated the effect of the outer electric field on the conductivity of silicon and the kinetics of the field effect, the effect of a constant electric field on surface recombination and the effect of a constant electric field on the capacitor emf. Summing up: The chemically treated silicon surface has a complicated system of surface levels, five fast ones and three slow ones. The main differences between silicon and germanium are the following: The concentration of the fast surface levels

Card 1/2

Surface Properties of Silicon

81948
S/181/60/002/04/06/034
B002/B063

is higher; the outermost levels are, energetically, at a greater distance from the center of the forbidden band; surface adhesion levels arise. The authors thank Professor V. I. Lyashenko and the co-workers of the Laboratoriya poverkhnostnykh yavleniy (Laboratory for Surface Phenomena) for their advice and critical remarks. V. Ye. Lashkarev is also mentioned. There are 10 figures, 2 tables, and 40 references: 21 Soviet, 1 Czech, 6 American, 11 British, and 1 Japanese.

ASSOCIATION: Institut fizika AN USSR, Kiyev
(Institute of Physics of the AS UkrSSR, Kiyev)

SUBMITTED: July 14, 1959

Card 2/2

24.7700 26591 S/185/60/005/003/006/020
D274/D303

AUTHORS: Prymachenko, V. Ye., Lytovchenko, V.G., Lyashenko, V.I. and Snitko, O.V.

TITLE: The study of fast and slow electron states on a germanium surface

PERIODICAL: Ukrayins'kyy fizychnyy zhurnal, v. 5, no. 3, 1960, 345-356

TEXT: The effect of an external electric field is studied on the dark conductivity (the field effect) and on the surface recombination of thin germanium plates in vacuo. The field effect was investigated at a d.c. voltage, as well as by applying rectangular pulses; this made it possible to determine separately the parameters of the fast and slow surface states. The method of investigation used is more advantageous than earlier methods; in particular, it permits studying all the surface states on a single specimen. The size of the specimens was approximately 1.5 x 0.5 x 0.015 cm. The specimens

Card 1/5

were treated with CP-4 and, after measurements, with boiling H_2O_2. The germanium plates were p-type with specific resistance 40 - 50 ohm. The specimen served as one plate of a capacitor to which a d.c. voltage of 2500 v was applied as well as an a.c. voltage (rectangular pulses). The dark conductivity σ was measured by a compensation method. The change in conductivity $\Delta\sigma$ (following the application of the rectangular pulses), was measured by a special circuit. The rate of surface recombination was determined by the effective relaxation time τ of the photoconductivity, following the illumination of the middle part of the specimen by the rectangular pulses of light. The relaxation of the photocurrent followed an exponential law. A diagram is given of the circuit used for the investigation. Curves are given for $\Delta\sigma$ as a function of the charge Q induced on the germanium surface. The presence of a minimum on the experimental curve $\Delta\sigma(Q)$ permitted determining the surface potential Y for each Q. The total surface potential reaches 15 kT/e $\approx$ 0.38 eV., i.e. it is approximately equal to half the width of the forbidden germanium zone. Further, the field effect makes it

Card 2/5

possible to determine the charge Q_s in both fast and slow states, ($Q_s = Q - Q_o$, where Q_o is the space charge). The surface charge in fast states changes relatively little for small Y, whereas for large Y it changes rather sharply. The dependence of Q_s on Y leads to the interpretation of the energy levels (discrete vs. continuous). The authors assume discrete interior levels; this assumption is supported by the results of recombination measurements and is also in agreement with A. Many's results (Ref. 21: J. Phys. Chem. Solids. 8, 87, 1959). Therefore, the results obtained from the field effect for the fast states are interpreted by the authors by means of a model of four discrete levels, whose parameters are given in a table; for the slow states, two discrete levels are assumed. The charge of the slow states is much greater than that of the fast states. Hence the slow states are of basic importance in screening the constant external field. Further, the dependence of the rate of surface recombination s on the surface potential Y is plotted and discussed. The fast levels are responsible for the recombination; two or even three such levels can substantially contribute to it; but, in gen-

eral, one of the fast levels is predominant in surface recombination. The values of the capture cross-sections of electrons and holes are given in the table. The measured values of the parameters of the surface levels depend on the etching method (by means of CP-4 or by H_2O_2) and on whether the surfaces were freshly etched or a long time ago (their previous history); thereby the difference in the parameters is, however, not as considerable as should have been expected; the concentration of the fast states, and especially their recombination capacities show considerable dependence on the previous history of the specimens. Finally, the presence of an oxide layer on the germanium surface is considered as definitely established; this layer has a complex chemical and polycrystalline structure. The layer is the main reason for the complex system of surface states of germanium. The slow states are found on the outer surface of the oxide, being mainly determined by adsorbed atoms, whereas the fast states are on the interface Ge-oxide, being mainly due to imperfections of structure and extraneous atoms. There are 5 figures, 1 table and 36 references: 14 Soviet-bloc and 22 non-Sov-

iet-bloc. The 4 most recent references to English-language publications read as follows: E. Harnik. G. Margoninski, Phys. a.Chem. Solids, 8, 96, 1959; A. Many, J. Phys. Chem. Solids, 8, 87, 1959; R.E. Schlier, H.E. Farnsworth, J. Chem. Phys., 30, 917, 1959; G.A. Barnes, P.C. Banbury, J. Phys. Chem. Solids, 8, 111, 1959.

ASSOCIATION: Instytut fizyky AN USSR (Physics Institute, AS Ukr SSR)

SUBMITTED: November 5, 1959

Card 5/5

9,4179 (1054,1114)

27948
S/185/60/005/004/007/021
D274/D306

AUTHORS: Trymachenko, V. Ye. and Snitko, O.V.

TITLE: Effect of the external electric field on capacitor photo-emf in germanium and silicon

PERIODICAL: Ukrayins'kyy fizychnyy zhurnal, v. 5, no. 4, 1960, 488-502

TEXT: An experimental study is described which had the purpose of ascertaining the effect of an external electric field on the capacitor photo-emf in germanium and silicon, and to verify the dependence of this emf on the surface buckling (flexure) of zones and on the surface states, as predicted by theory. In addition, the kinetics of the photo-emf was investigated. Reasons are given for the failure to observe the effect of the external field on the photo-emf. In the present investigation, the necessary steps were taken to avoid such a failure. Thus, e.g. the electric field-strength in the capacitor was increased to $1.5 \cdot 10^6$ v/cm. Under the

X

Card 1/8

Effect of the external electric...

conditions of the experiment, a strong effect was observed of the external field on the photo-emf in all the investigated specimens (nearly 20). Partial results of the investigation were published in earlier works. Experimental method. Thin plates of germanium and silicon single crystals were investigated. To one side of the plate, electrodes and probes were applied for measurements of dark and photoconductivity, whereas a mica plate was applied to the other side of the specimen. The capacitance Q of the capacitor thus formed was measured. It turned out to be much less than the calculated one. The specimens were illuminated by rectangular pulses. The capacitor photo-emf was measured by means of the usual circuit (as given in references). A figure shows the time dependence of the photo-emf V_p on switching on and switching off the external field. The experiments were conducted both at normal pressure and in a vacuum. The most important feature of the dependence of V_p on the external field U is the existence of two limiting values of V_p, between which V_p changes in a comparatively narrow interval of U. As a rule, both the germanium and silicon specimens show a

Card 2/8

Effect of the external electric...

shift of the dependence $V_p(U)$ towards positive values of V_p in the case of n-type crystals, and towards negative values of V_p in the case of p-type crystals. Simultaneously, the effect of the external field on the dark conductivity was measured. The change in surface conductivity $\Delta\sigma$ is a result of a change in electron- and hole concentration in the space-charge layer. Thereby the conductivity passes (depending on zone buckling) through a minimum when the reduction in majority carriers is compensated by an increase in minority carriers. It is noted that the correlation between the minimum of $\Delta\sigma$ and the region of sharp change of V_p is so strong, that the slightest change in the method of surface treatment which shifts the minimum of $\Delta\sigma(U)$ along the U-axis, leads at one to a corresponding shift of the curve $V_p(U)$. This shows the importance of surface zone buckling for the generation of the photo-emf. Measurements of dark conductivity and the minimum of the curve $\Delta\sigma$ (U) make it possible to determine for each value of U the surface potential Y which corresponds to surface zone buckling. For that purpose the theoretical curve $\Delta\sigma(Y)$ was calculated for each speci-

Card 3/8

Effect of the external electric...

men. By comparing it with the experimental curve $\Delta\sigma(U)$, it was possible to determine the dependence between U and Y. Further, the kinetics of the capacitor photo-emf was investigated. This is important in connection with E.O. Johnson's method of determining the lifetime of minority carriers by means of the relaxation time of the photo-emf (Ref. 28: J. Appl. Phys., 28, 1349, 1957). Where as the author obtained, in the absence of an external field, a time constant which agreed with the results of Ref. 28 (Op. cit), he was unable to investigate the relaxation time of the photo-emf in the presence of an external field; this was due to the small magnitude of the photo-emf (hundreds of microvolts) and to background effects. It was established that the majority of silicon specimens has a nearly-exponential relaxation of the photo-emf with time constant τ_p of the order of tens of microseconds. Some of the silicon specimens showed a sharp non-exponential relaxation of the photo-emf. The surface photo-emf V_p^s was approximately computed by several authors, the best of these computations being E.O. Johnson's (Ref. 12: Phys. Rev., 111, 153, 1958); this computation was done

Card 4/8